

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-12. (Canceled)

13. (Currently Amended) An information recording medium comprising:

a pair of electrodes; and

a liquid crystal material filled into a gap between said electrodes, the liquid crystal material comprising a rod-shape liquid crystal compound;

wherein

the liquid crystal material has a property such that charge-transport properties are varied according to a phase transfer between a plurality of stable liquid crystal phases of the liquid crystal and/or a history of the phase transfer, the phase transfer of the liquid crystal material occurring upon a change in temperature of the liquid crystal material between a crystalline phase at a room temperature to an isotropic phase in a final state through a smectic phase at an elevated temperature;

the liquid crystal material comprises a material selected from the group consisting of a phenylbenzothiazole liquid crystal, 4-hexyloxy-4-butanoylbiphenyl, and a phenylnaphthalene liquid crystal wherein the phenylnaphthalene is one selected from the group consisting of 2-(4'-octylphenyl)-6-dodecyloxynaphthalene, 2-(4'-octylphenyl)-6-butyloxynaphthalene, 2-(4'-octylphenyl)-6-nonyloxynaphthalene and a mixture thereof;

a thickness of the gap between the electrodes is larger than a domain size of the liquid crystal compound at least in the initial state of the liquid crystal material, and the thickness of the gap is between the electrodes being smaller than a domain size of the liquid crystal compound in a cooled state from the isotropic phase in a final state; and

the information recording medium is configured so that information can be recorded by application of thermal energy to an area of the medium, and recorded information can be read by detecting a value of photoelectric current generated by light applied to the area of the medium at which information was recorded.

14-15. (Canceled)

16. (Previously Presented) The information recording medium according to claim 13, wherein at least one of the pair of electrodes is transparent to light.

17. (Previously Presented) The information recording medium according to claim 13, wherein a thermal head or a laser beam is used as means for applying thermal energy for information recording.

18. (Previously Presented) The information recording medium according to claim 13, wherein the phenylbenzothiazole liquid crystal material is 2-(4'-heptyloxyphenyl)-6-dodecylthiobenzothiazole.

19. (Previously Presented) The information recording medium according to claim 13, wherein

the liquid crystal material comprises a liquid crystalline charge-transport material,

a background for information recording is in a state that the charge-transport properties are inhibited attributable to polycrystalline structural defects in the initial state of the liquid crystal charge-transport material, and

information recording is carried out by phase transfer caused in the background upon the application of thermal energy.

20. (Previously Presented) The information recording medium according to claim 13, wherein two or more charge-transport properties can be developed in a specific liquid crystal phase according to the level of the thermal energy applied.

21. (Previously Presented) The information recording medium according to claim 13, wherein the pair of electrodes is provided on a substrate.

22. (Previously Presented) The information recording medium according to claim 13, wherein the thickness between the pair of electrodes satisfies both requirements represented by inequalities (A) and (B):

(A) (Permeation depth at excitation light wavelength of liquid crystal material)
< (Thickness between pair of electrodes)

(B) (Thickness between pair of electrodes) < (Thickness which can exhibit field strength such as to enable reading of photoelectric current).

23. (Previously Presented) A device comprising:
a pair of electrodes;
a liquid crystal material filled into a gap between said electrodes, the liquid crystal material comprising a rod-shape liquid crystal compound,
said liquid crystal material having a property such that charge-transport properties are varied according to a phase transfer between a plurality of stable liquid crystal phases of the liquid crystal and/or a history of the phase transfer, the phase transfer of the liquid crystal material occurring upon a change in temperature of the liquid crystal material between a crystalline phase at a room temperature to an isotropic phase in a final state through a smectic phase at an elevated temperature, and
a thickness of the gap between the electrodes being smaller than a domain size of the liquid crystal compound in a cooled state from the isotropic phase in a final state; and
the device is configured so that information can be recorded by application of thermal energy to an area of the device, and recorded information can be read by detecting a value of photoelectric current generated by light applied to the area of the device at which information was recorded.